DOE File PASSF 1,2,1
5/16/74
Letter from Bollen to RRI
N-6

Resource Recovery, Inc.
Pasco Disposal Facility
Requirements for Facility Closedown
and Site Monitoring

Prior to termination of operations at the Resource Recovery, Inc. Pasco Disposal Facility on or before January 1, 1975, the Corporation shall comply with the provisions of this order. The Department of Ecology will conduct site inspections during and after facility closedown to assure that satisfactory compliance measures are made.

Provisions

(see Figure 1 for Site Plan, Figure 2 for Lined Trenches, and Table 1 for Description)

Facility Closure

1. Backfill and covering -- Solid waste disposal sites (locations 1, 6, 10, 11, and 12) shall be covered with a minimum of 2 feet of soil and a 20 mil thick plastic sheeting (polyethelylene or equivalent) installed over the site. The synthetic liner shall extend at least 10 feet beyond the edges of the trench or pit. At least 3 feet of soil shall be placed over the liner. If the backfill extends above existing grade, the material will be contoured smoothly into the land surface.

Prior to site closure, all chlor-alkali sludge shall be moved from temporary storage (5, 8, 9) to the lined storage trenches (10, 11, 12) for permanent disposal.

Polyethylene under

Liquid wastes (2, 3, 4) will be evaporated to near dryness and the sites covered as per the solid waste site specifications.

not done

2. Site Identification -- Each disposal facility shall be identified by a permanent monument placed adjacent to the west end of the individual pit or trench. The following data shall be stamped or engraved on the monument: (1) Facility number, (2) size (dimensions), (3) brief description of contained material(s), (4) amount of material (gallons, tons, drums, etc.) and container size (if contained), (5) dates of use.

deed done

3. Inventory -- An inventory of all wastes disposed to the Pasco Facility shall be submitted to the Department and to the local health departments. The inventory shall include details on the items noted on the monuments (using consistent site numbers) and, in addition, analytical data on the wastes and source of origin. Maps and the above statement of facts concerning the disposal area shall be recorded as part of the deed with the county auditor not later than three (3) months after the completion of operations. Records and plans specifying materials, location, and periods of operation shall be available for inspection. Areas used for the disposal of hazardous wastes shall not be sold or transferred without advanced notification of the jurisdictional health department and the Department of Ecology.

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Access – not restricted but controlled

4. Isolation -- The disposal facility shall be isolated and protected from entrance or trespass by a fence that encloses the facility. Gates shall be fixed with approved locks. At the option of the Corporation, multiple fences may be used to isolate individual sites or groups of sites.

5. Inspection and Maintenance -- The Department and the health department will inspect the site for compliance with closure provisions as the work progresses and will perform a final site inspection on completion of closure to assure compliance with these conditions.

Following the closure of the site and inspection by the Department of Ecology and the health department necessary maintenance shall be conducted by the Corporation and any problems noted by the surveillance program should be immediately corrected. Cracks in surface cover must be sealed, and grades disturbed by settlement must be repaired.

Monitoring

Dedication of the site as an abandoned hazardous waste disposal facility must be assured for a minimum of two years and appropriate air, water, and soil monitoring procedures implemented during this period under supervision by the Department of Ecology.

Water -- Ground water shall be monitored to detect any possible contamination from the disposal facility. Water samples will be taken quarterly from the existing well adjacent to the sanitary landfill for the first year following the facility closure. Ground water samples will be taken semi-annually for the ensuing year. Continued sampling over an additional period of time may be required by the Department if deemed necessary. Selected off-site ground water samples may be required at time intervals and at locations specified by the Department. The Department will provide water sample containers and perform appropriate analyses. The Corporation will perform the sampling under direction of the Department.

Air -- Air samples will be taken quarterly or more frequently if deemed necessary for the first year at a location specified by the Department. Subsequent air samples will be taken semi-annually (during the growing season) for the ensuing year. Sampling equipment will be supplied by the Department and appropriate analyses made by the Department. The Corporation will provide for operation and service of the air monitoring equipment.

Soil -- Moisture detection devices shall be placed 10 feet below grade adjacent to the liquid waste disposal sites. The number and locations of the sensors will be determined by the Department, however, no less than four sensors shall be installed per individual trench or pit. The moisture detectors shall be monitored quarterly by the Corporation and the data forwarded to the Department for a two year period. An additional monitoring period will be required if deemed necessary.

Surface soil samples shall be taken by the Corporation at locations and times specified by the Department. The samples will be submitted to the Department for analysis.

Where are results? Call w.

end of the two year sampling period or at the time the Department of Ecology is fully satisfied that no potential exists for future contamination, the Company will be notified in writing and further monitoring will not be required.

III. PROBABILITY OF GROUND-WATER CONTAMINATION

A. Geology and Hydrology

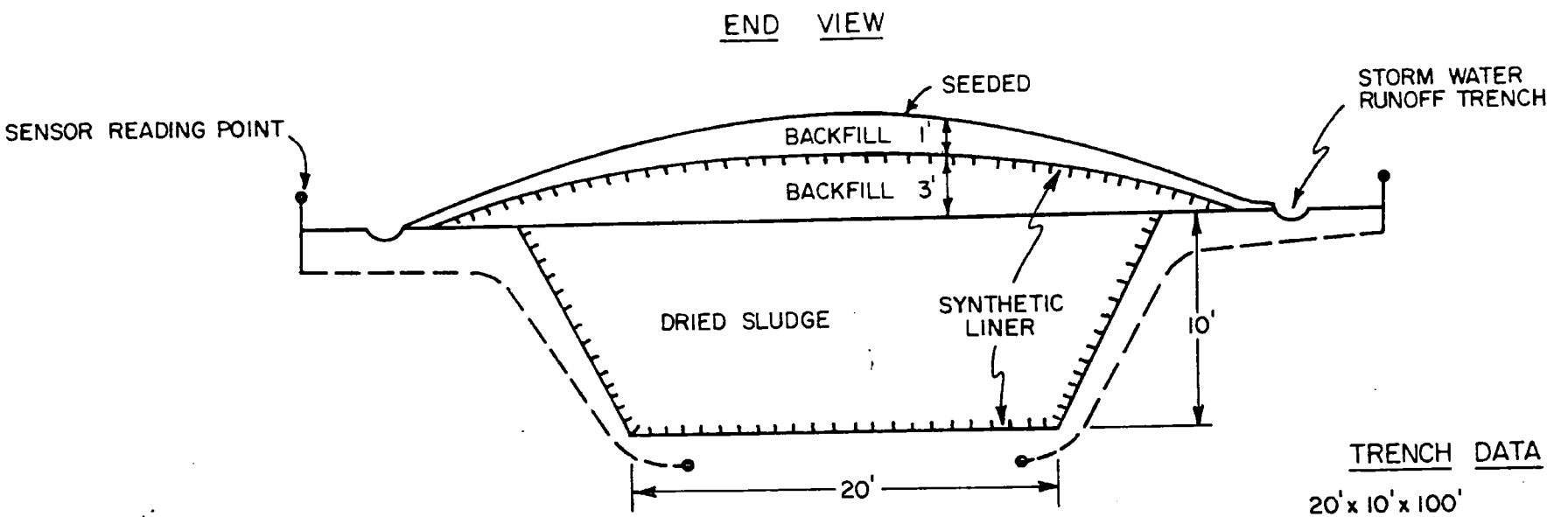
The geology and hydrology of the disposal site are known in a general way from several investigations that include the site as part of a broader study* and from a specific investigation by R. E. Brown.** The logs of existing wells give the best definitive information on the geology of the area.

The earth materials occurring on the surface of the ground at the disposal site consist of wind deposited (eolian) sands and silts at elevations at and above approximately 410 feet msl. The eolian deposits are formed into dunes that are fairly well stabilized by sparse vegetation. The eolian deposits are underlain by sands and silts of the Touchet formation from an elevation of about 410 feet to 370 feet msl. A zone of sandy gravel (Pasco gravels) occurs beneath the Touchet formation from 370 to approximately 350 feet msl. The Touchet formation and the Pasco gravels are called glaciofluvial sediments because they were deposited mainly by floods of glacial melt water.*** A series of highly variable lake and river deposited sands, silts, clays, and gravels known as the Ringold formation underlie the glaciofluvial deposits. The Ringold formation beneath the site consists of a medium sand from 350 feet to approximately 310 feet msl, sand and gravel from 310 feet to approximately 300 feet msl and silty clay from 300 feet msl to an unknown depth. The thick Yakima basalt sequence lies below the Ringold formation. The exact elevation of the basalt bedrock at the disposal site is not known as the existing well at the site does not penetrate the Ringold clay. However, data from adjacent wells indicate that the basalt is at an elevation of about 270 feet msl (140 feet below average land surface at the site).

Ground water beneath the disposal site occurs in the basalt sequence and in the overlying sedimentary materials. The disposal site will have a potential impact only on the ground water in the sedimentary zone. A comprehensive ground water study of the Columbia Basin was recently completed by the United States Geological Survey and the Department of Ecology.*** The study resulted in development of numerical models (computer models) of the ground-water system for the entire Columbia Basin Irrigation Project. The ground-water model of the Pasco Basin part of the Columbia Basin Project includes the Pasco waste disposal site. The model was used to determine response of ground-water levels at the disposal site.

* See items 1,2,3 on reference page.
** See item 4 on reference page.
*** See item 1 on reference page.
**** See item 3 on reference page.

SCHEMATIC DISPOSAL TRENCH DESIGN



TRENCH DATA

20' x 10' x 100'
CONTENT – 1500 TONS
WEIGHT – 150 lbs/cu.ft.
LINER – TOP & BOTTOM
SENSORS – 4
TEST WELLS – 2 IN AREA

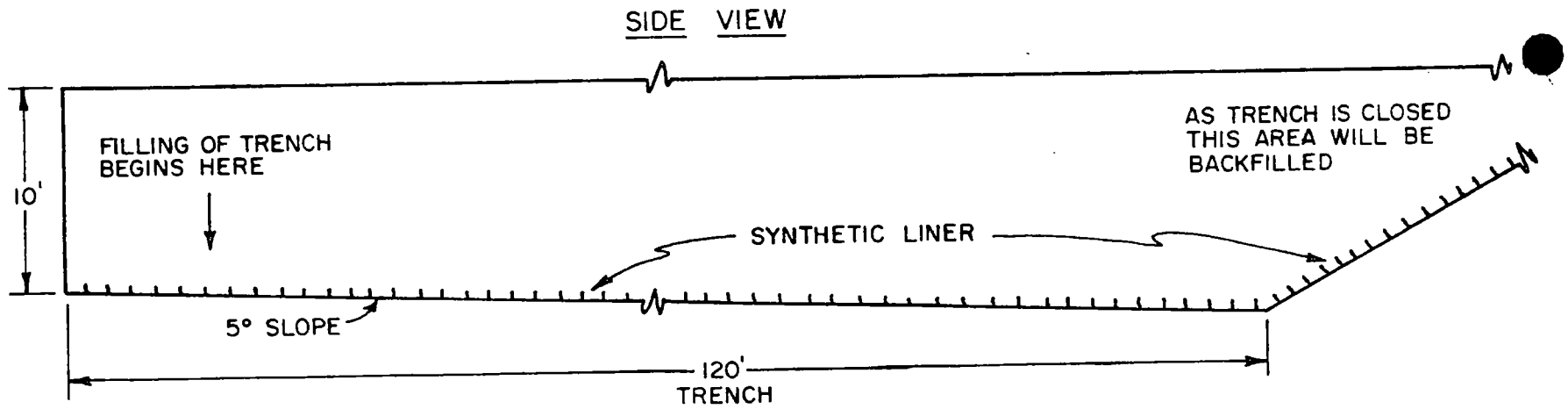


Figure 2

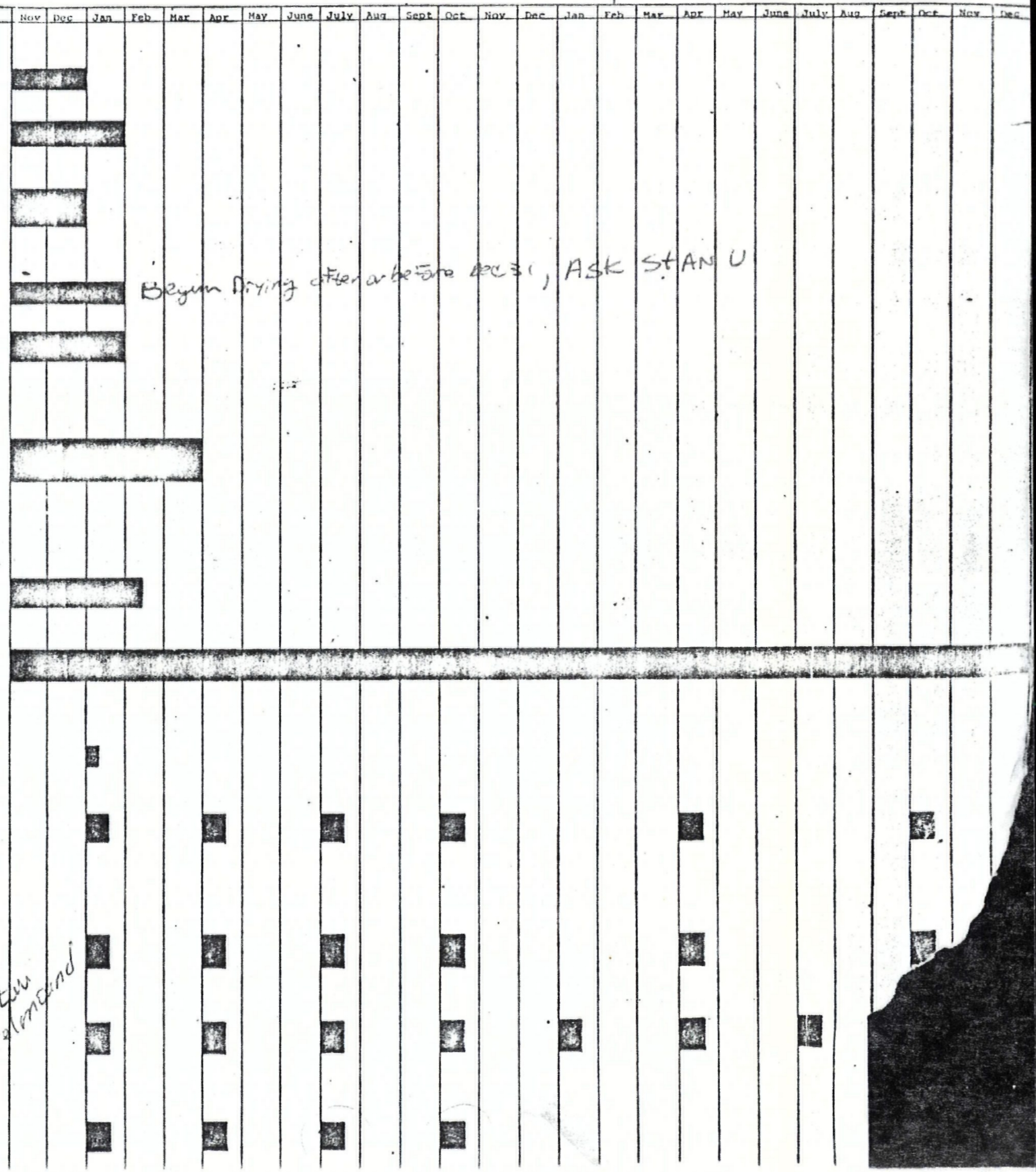
DOE File 1974

Draft 8-21-79

Plan of Action For Closedown and Site Monitoring
of Resource Recovery, Inc., Industrial Waste Facility
at Pasco, Washington (1975-76)

Contact Health Dept & C. Common this

Activities	Implementation By:	Participants
Facility Closure		
Prior to site closure, all chlor-alkali sludge shall be moved from temporary storage (5, 8, 9) to the lined storage trenches (10, 11, 12) for permanent disposal.	Resource Recovery, Inc.	DOE (Insp) Local Health (Insp)
Isolation — The disposal facility shall be isolated and protected from entrance or trespass by a fence that encloses the facility. Gates shall be fixed with approved locks. At the option of the Corporation, multiple fences may be used to isolate individual sites or groups of sites.	Resource Recovery, Inc.	DOE (Insp) Local Health (Insp)
Backfill and covering — Solid waste disposal sites (locations 1, 6, 10, 11, and 12) shall be covered with a minimum of 2 feet of soil and a 20 mil thick plastic sheeting (polyethelylene or equivalent) installed over the site. The synthetic liner shall extend at least 10 feet beyond the edges of the trench or pit. At least 3 feet of soil shall be placed over the liner. If the backfill extends above existing grade, the material will be contoured smoothly into the land surface. Pitch around	Resource Recovery, Inc.	DOE (Insp) Local Health (Insp)
Liquid waste (2, 3, 4) will be evaporated to near dryness and the sites covered as per the solid waste site specifications.	Resource Recovery, Inc.	DOE (Insp) Local Health (Insp)
Site Identification — Each disposal facility shall be identified by a per[illegible]t monument placed adjacent to the west end of the individual pit or t[illegible] The following data shall be stamped or engraved on the monument: (1[illegible]ility number, (2) size (dimensions), (3) brief description of contained material(s), (4) amount of material (gallons, tons, drums, etc.) and container size (if contained), (5) dates of use. Set in Conc[illegible]	Resource Recovery, Inc.	Local Health (Insp)
Inventory -- An inventory of all wastes disposed to the Pasco Facility shall be submitted to the Department and to the local health departments. The inventory shall include details on the items noted on the monuments (using consistent site numbers) and, in addition, analytical data on the wastes and source of origin. Maps and the above statement of facts concerning the disposal area shall be recorded as part of the deed with the county auditor not later than three (3) months after the completion of operations. Records and plans specifying materials, location, and periods of operation shall be available for inspection. Areas used for the disposal of hazardous wastes shall not be sol d or transferred without advanced notification of jurisdictional health department and the Department of Ecology. or utilized for other purpose	Resource Recovery, Inc.	DOE (Review & App) Local Health (Review & App) County Auditor (Record & File)
Inspection and Maintenance — The Department and the health department will inspect the site for compliance with closure provisions as the work progresses and will perform a final site inspection on completion of closure to assure compliance with these conditions.	DOE Local Health	Resource Recovery, Inc.
Following the closure of the site and inspection by the Department of Ecology and the health department necessary maintenance shall be conducted by the Corporation and any problems noted by the surveillance program should be immediately corrected. Cracks in surface cover must be sealed, and grades disturbed by settlement must be repaired.	Resource Recovery, Inc.	DOE (Insp & Surv) Local Health (Insp & Surv)
Facility Monitoring		
Training -- Implement a training program for Resource Recovery site perso[illegible] performing the necessary air, water and soil monitoring procedures.	DOE Local Health	Resource Recovery, Inc.
Wa[illegible] Ground water shall be monitored to detect any possible contamination from the disposal facility. Water samples will be taken quarterly from the existing well adjacent to the sanitary landfill for the first year following the facility closure. Ground water samples will be taken semi-annually for the ensuing year. Continued sampling over an additional period of time may be required by the Department if deemed necessary. Selected off-site ground water samples may be required at time intervals and at locations specified by the Department. The Department will provide water sample containers and perform appropriate analyses. The Corporation will perform the sampling under direction of the Department. continued maint of well	Resource Recovery, Inc. DOE	Local Health
Air — Air samples will be taken quarterly or more frequently if deemed necessary for the first year at a location specified by the Department. Subsequent air samples will be taken semi-annually (during the growing season) for the ensuing year. Sampling equipment will be supplied by the Department and appropriate analyses made by the Department. The corporation will provide for operation and servi-e of the air monitoring equipment.	Resource Recovery, Inc. DOE	Local Health
Soil — Moisture detection devices shall be placed 10 feet below grade adjacent to the liquid waste disposal sites. The number and locations of the sensors will be determined by the Department, however, no less than four sensors shall be installed per individual trench or pit. The moisture detectors shall be monitored quarterly by the Corporation and the data forwarded to the Department for a two year period. An additional monitoring period will be required if deemed necessary.	Resource Recovery, Inc. DOE	Local Health
Surface soil samples shall be taken by the Corporation at locations and times specified by the Department. The samples will be submitted to the Department for analysis.	Resource Recovery, Inc. DOE	Local Health



Attachments

THE SITE ITSELF

1. Site Accessibility ☒ File Data ☐ Observed

- Fenced, patrolled, signs posted
- Roadway, parking area--asphalt, concrete, dirt
- Is there a "staging" area or chemical transfer area?

ERRIS rep. in 1979

Solid Waste landfill & septic tank sludge pond are activities of 1979
Septic Tank sludge pond on site
3 types of disposal: 1) liquid waste lagoon; 2) pesticide sludge disposal area [illegible] & 3) paint, oil, solvent etc. area (See DOE for inventory of above)

DOE MEMO 8/3/73

2. Waste Containment ☒ File Data ☐ Observed

A. Containers: types, sealed/unsealed, stacked, sorted
Paint wastes, wood treatment wastes, etching solutions, and herbicide wastes have been buried. Disposer agrees not accept containers unless unflawed, properly labeled, no visible leaks, expansion space in ea. container, & clean drums. Also herbicides not transported from 4/1 to 9/1.

B. Waste piles: covered/uncovered, with what type of material?
When covered - use sand (high permeability) 1-2 feet thick
fractive portion not adequately covered during '79 site visit altho [illegible] report says to be applied, should check on this

C. Diking or diversion system present: of what materials, how high, is it adequate to contain wastes (runoff, seepage)?
Diversion systems not applic (ERRIS)

D. Leachate collection treatment, disposal system (if applicable): type, construction materials
Water Solutions are emptied in small (50'x100'x6') resin lined ponds
Simple water solutions are emptied into small unlined ponds

E. Natural or man-made liners present?
Artificial membrane liner ~~installed~~ Erris

F. Air emissions: characteristics (smoke, smell, etc.)
Water vapor is only air pollution from ponds; no adverse envir. effects are anticip. Prob. of air Pollution problem greatest during transportation & burial of sealed containers. Less potential after burial

3. Is the Site of Dumping Legal or Illegal?
Legal until County discovered pesticides: see history on back of last page

4. Are there Storm Sewers or Sanitary Sewers Near/At/Below the Site?

Margin notes: and later by [illegible] EPA reports "several sources claim several drums leaking & these w/ missing bungs."
~~Lowever~~ ~~Site inspection~~ reported 2-40 drums & in adequate [illegible] DOE 3/31/76 PP [illegible]
ERRIS

* DOE '73 reports that irrigation on adjacent lands could cause a hazard from shallow, laterally moving H_2O: In fact Touchet surface is in proximity of wastes in disposal site & wastes could be more shallow & flushed in lateral movement

PHYSICAL DATA

1. Water ☑ File Data ☐ Observed

- Net precipitation
  7-(8)"/yr. (don't know if 'net') Most precip. occurring as rain or snow during winter months annual evaporation potential is about 60 inches per year w/ 80% occurring from May - Oct DOE 1973 Eval. I
- Depth to groundwater/aquifer of concern
  * approx 55' - flow is southerly (Erris) toward Snake & Columbia
  70-80' accord to Larry Dietrich
  DOE '73 GW occurs in basalt sequence & overlying sedimentary materials & aquifer of concern is in sed. material. Average elev. of GW = 355' msl; surface of groundwater sits on Ringold strands.
- Distance to nearest downgradient surface water (intermittent if in area of less than 20 in annual precipitation)
  Prob. Columbia/Snake (3 mi)
- Use of surface water
  (NA)
- Use of groundwater
  Erris { *Irrigation / Domestic | EPA concerned about groundwater contamin (7/25/79 memo in Erris)
- Distance to nearest well in aquifer of concern
  Well for drinking on site. Source of drinking water to East

2. Terrain/Soils ☑ File Data ☐ Observed

- Average slope of shortest runoff path to nearest surface water
  less than 5% slopes east to west; very permeable soils (1000 - 10 cm/sec.) (Erris)
- Type of geological stratigraphy in top 200 ft.
  Sand approx 140' below surface
  (DOE 1973 Eval of Site) — Eolian sands underlain by sands & silts of the Touchet formation from 410 - 370' msl. A zone of sandy gravel (Pasco gravels) occurs under Touchet from 370 - 350' msl. Both of these formations called glaciofluvial.
- Type and depth of soil in vados zone (top 15 ft)
  sandy loam
  (DOE 1973 Eval of Site) wind deposited sands and silts @ elevations at and above 410' msl from dunes, "fairly well stabilized by sparse vegetation"
  next, comes Ringold Formation (350 - 310' msl) consists of (1) medium sand (2) sand & gravel 310 - 300' msl, and (3) silty clay from 300 to unknown
  The Yakima basalt lies under Ringold Formation, exact elevations at site unknown but adjacent wells show 270' msl (140 ft below avg. land surface elev.)

Physical Data (cont'd)

3. Sensitive Habitats ☑ File Data ☐ Observed

- Distance to nearest wetlands (if any)

- Distance to nearest "critical habitat" (if any)
  Some vegetation near the 2-4 D disposal area appeared to be affected. This may be natural however (ERRIS)

- Damage to flora or fauna
  Alleged damage to local grapes (not proven) by 2-4 D & MCPA Bleed vapors DOE Files 1973

4. Land Use ☒ File Data ☐ Observed

- Distance to:

  - Commercial/industrial
    1 building, 10-15 people within one mile

  - Agricultural lands
    adjoin property

  - Parks and wilderness areas NWR's
    McNary NWR ≈ 3 miles SE; Strawberry Mt (satellite of McNary ≈ 2.5 E, SE)
    SACAJAWEA SP ≈ 3 mi S. at confluence of Snake & Columbia Rivers

  - Historic or landmark sites

  - Residential areas
    one sub-development ≈ 1½ mi SW

- Distance to nearest building
  Operator gate shack and residence on site (ERRIS, Inspec. Forms)

- Number of buildings within two miles
  1 building - 1 mile distant to site

- Is there offsite/on site property damage?
  Wind erosion occurred at 2-4 D disposal area
  Exposed sheeting used to cover the wastes
  Vegetation also appears affected (Erris)

File = DOE 1973 cont.

Letter 7/19/73 from RR to Boeing saying OK w/ DOE & Bent./Frank. health to accept carcinogenics at Pasco Site. Unknown what types but estimated qties few hundred drums/year

State DOE memo dated 8/13/73 states an inspection of Pasco found several barrels of 2-4D tar leaking out 8/9/73

9/24/73 Board of County Comm (Franklin Cty) requested RRL to cease industrial waste disposal @ Franklin Cty Site

10/11/73 DOE ~~directed~~ ordered RRL to stop accepting 2,4-D & MCP (Notice of violation of permit #5301)

Physical Data (cont'd)

5. Population ☐ File Data ☐ Observed

- Population numbers within:
  - 1 mile
  - 2 miles
  - 4 miles
- Distance to nearest populations (one person or more)
- Population served by wells ~~of concern~~ 5 and/or aquifers of concern Public water

6. Direct Contact ☐ File Data ☐ Observed

- Is there potential for worker exposure/contact? (Route: respiratory/skin/internal)
  Permit applicat. Dated 11/10/82 (DoE Files) list AVG. 3 workers day only MAX 5 workers day / 3-night
- Is there potential for population exposure at the site? (What mechanism?)
  10-15 people work within 1 mile (Ecris)

7. Site History

Report in Ecris File has copy of Oregon DEQ summary of a spill by Resource Recovery Truck bound for Arlington. Uncertain of connection to Pasco LDFL.

DOE FILES

Historical data from DOE files

DOE File 1-1972

March '72 meeting w/ Chem Pro discussing proposed disposal of wastes (industrial) @ Pasco landfill.

Chempro 1) has 60 customers which dispose paint pigments
2) Boeing - Chromic acid
3) ~~Monsanto~~ - Dust w/ copper

In letter from Chem Pro 3/29/72 . described #1) waste as "pigment and resin sludge w/ most solvents removed.

Letter from 7/72 Monsanto Describing wastes that may go in proposed Pasco site: Vanillin - VBL Solids contains 60-65% solids, the rest H_2O solids dried = 32% carbonate, 25% oxalate, 0.5% sulfate 31% calcium, 2.5% copper (DOE concerned about Cu content and leachate

Letter from Benton Franklin Health Dept. 2/27/72 opposing proposed site "not to be used for hazardous and/or special waste disposal
State DOE Yakima office concurred

Look for a 3/15/72 Report by Robert H. Russell, Geologist Office of Technical Services presenting data on ground H_2O

Chem Pro & Basin Disposal Co formed Resource Recovery inc

2 letters (11/2/72) from Benton/Franklin Health Dept. show now an approval of the proposed site based on plans submitted also in letter states authority of Pasco ldfl to accept "containers, product, or derivatives of pestici. (fungici, herbici, defoliant or fert. wastes was granted "over 2 yrs ago" -
{Was this approval used???

Letter of 11/6/72 from DOE, Spokane confirming the meeting to approve industrial waste discharge permit to R.R.C.

File 2 DOE 1973

Letter 1/9/73 from Chem Nuclear quest. permit issued by DOE To RR to bury chlorinated hydrocarbons.

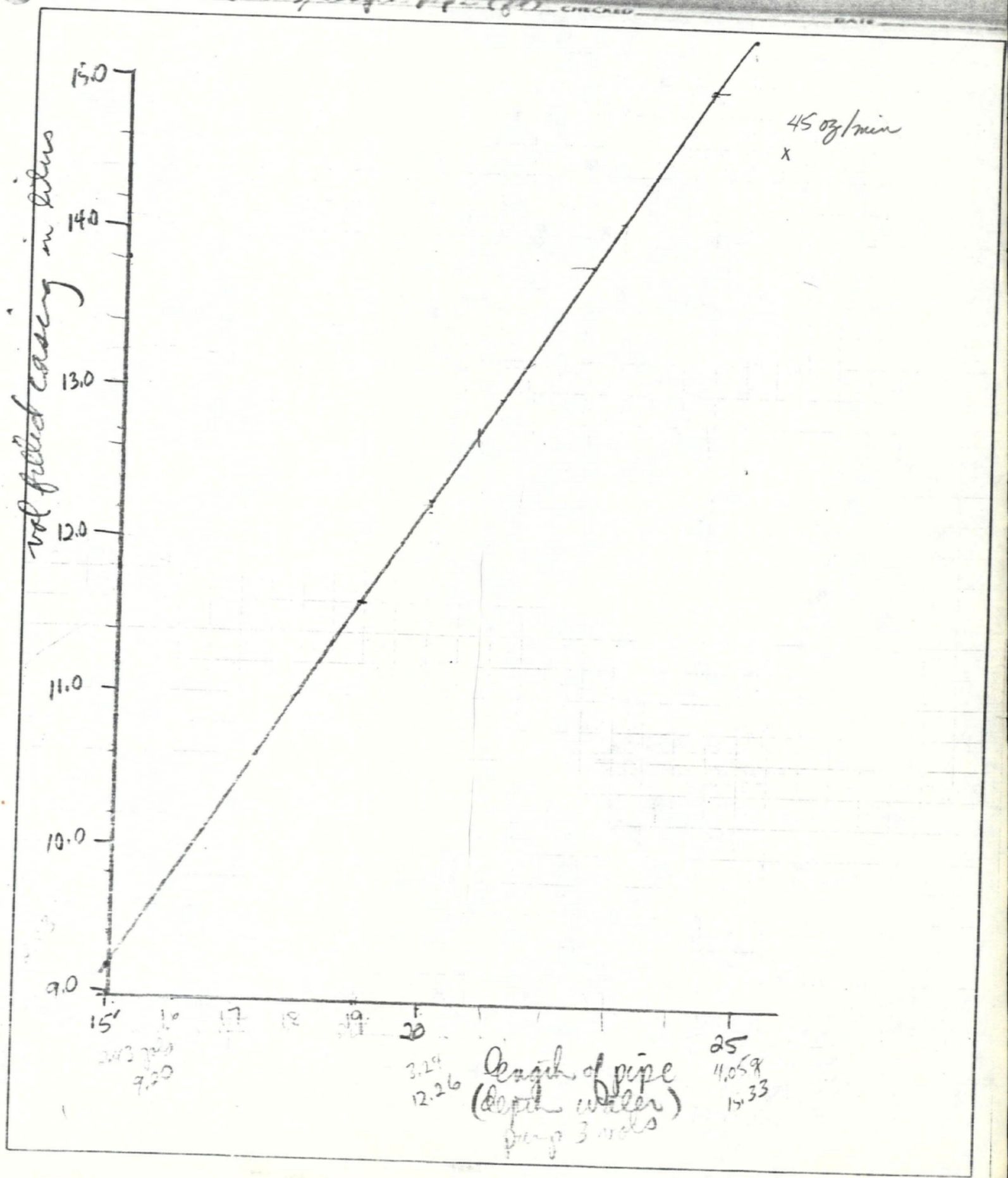
Permit #5301 application described "non-overflow, evaporative storage lagoons"

Permit was issued 3/21/73 and to expire 3/21 78

Letter of 5/9/73 from RR describing Weyerhauser sludge contents include 50% H_2O, barium sulphate, magnesium hydroxide & calcium carbonate & 50-60 PPM mercury, Sludge sh'd be dewatered & placed in non-leachate disposal location Expect Weyer. to produce 2000 more tons of same Georgia Pacific and some other cos. may also have some Now accumulate 10,000 tons

Letter from 5/17/73 GEORGE D. WARD & ASSOC in Portland asking to dispose of 1) Chromium plating sol 2) Cyanide Plating Sol. #3) synthetic organics such as chlorophenols. Unknown if accepted at Pasco

RR report of 6/11/73 reported (inconclusive) that solid (lime sludge) disposed in unlined pond - coated and limited moisture penetration to 10" - Used this to suggest not lining ponds for "single-type wastes"


15.0
14.0
13.0
12.0
11.0
10.0
9.0
vol filled casing in Liters
45 oz/min
15
20
25
Length of pipe
(depth under water)